

What is claimed is:

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1. A method for reordering messages for processing, the messages received from a communication network, each message characterized by a source identifier and type, the method comprising:
- 5 providing a message store, the message store including a plurality of storage slots; providing a plurality of FIFO queues; enqueueing a given message including:
- 10 storing the given message in a given storage slot identified by a given tag; selecting one of the FIFO queues based at least on source identifier and type for the given message; and loading the given tag onto the selected FIFO queue.
2. The method of claim 1 further including:
- selecting a message for dequeuing after the tag corresponding to the message is at the head of one of the FIFO queues;
- 15 removing the tag corresponding to the selected message from the corresponding FIFO queue; and freeing the storage slot identified by the tag corresponding to the selected message.
3. The method of claim 2 wherein selecting a message for dequeuing includes arbitrating for priority by applying a round robin priority algorithm.
- 20 4. The method of claim 2 wherein selecting a message for dequeuing further includes determining that resources are available for processing the message.
5. The method of claim 4 wherein selecting a message for dequeuing further includes arbitrating for priority.
- 25 6. The method of claim 1 wherein selecting one of the FIFO queues includes ensuring that no two FIFO queues contain tags corresponding to messages with the same source identifier and type.
7. The method of claim 1 wherein the number of FIFO queues equals the number of storage slots.
- 30 8. A method for reordering messages for processing by a node, the messages received from a communication network, each message characterized by a source identifier and type, the method comprising:
- providing a message store, the message store including a plurality of storage slots,

the slots storing messages;

providing a plurality of FIFO queues, the queues containing tags corresponding to storage slots;

5 selecting a given message for dequeuing after the tag corresponding to the given message is at the head of one of the FIFO queues;

removing the tag corresponding to the given message from the FIFO queue; and  
freeing the storage slot identified by the tag.

9. A method according to claim 8, wherein selecting a given message for dequeuing further includes determining that the node has acquired resources for processing the given message.

10. A method according to claim 8, wherein selecting a given message for dequeuing further includes arbitrating for priority among messages for which the corresponding tag is at the head of one of the FIFO queues and for which the node has acquired resources for processing the given message.

15 11. A method according to claim 10, wherein arbitrating for priority includes applying a round robin priority algorithm.

12. A message reordering device for messages received from a communication network for processing, each message characterized by a source identifier and a type, the device comprising:

20 a message store, the message store including a plurality of storage slots;

a plurality of FIFO queues;

logic for enqueueing a given message including:

storing the given message in a storage slot identified by a given tag;

25 selecting one of the plurality of FIFO queues based at least on source identifier and type for the message; and

loading the given tag onto the selected FIFO queue.

13. The device of claim 12 further including:

logic for selecting a given message for dequeuing ;

30 logic for removing the tag corresponding to the given message from the corresponding FIFO queue; and

logic for freeing the storage slot identified by the tag corresponding to the given message.

14. The device of claim 13, wherein logic for selecting a given message for dequeuing further includes logic for arbitrating for priority among messages for which the corresponding tag is at the head of any FIFO queue and for which the node has acquired resources for processing the message.

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